



SEQUENCE LISTING

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<120> DNA ENCODING APOPTOSIS-INDUCED eIF-5A AND DHS AND A
METHOD FOR CONTROLLING APOPTOSIS

<130> 10799/13

<140> 09/909,796
<141> 2001-07-23

<160> 21

<170> PatentIn Ver. 2.1

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<213> Rattus sp.

<220>
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<222> (33)..(494)

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gag aca gga gat gca ggg gcc tca gcc acc ttc cca atg cag tgc tca 101
Glu Thr Gly Asp Ala Gly Ala Ser Ala Thr Phe Pro Met Gln Cys Ser
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gca tta cgt aag aat ggt ttt gtg gtg ctc aag ggc cgg cca tgt aag 149
Ala Ile Arg Lys Asn Gly Phe Val Val Leu Lys Gly Arg Pro Cys Lys
25 30 35
atc gtc gag atg tct act tcg aag act ggc aag cat ggc cat gcc aag 197
Ile Val Glu Met Ser Thr Ser Lys Thr Gly Lys His Gly His Ala Lys
40 45 50 55
gtc cat ctg gtt ggt att gat att ttt act ggg aag aaa tat gaa gat 245
Val His Leu Val Gly Ile Asp Ile Phe Thr Gly Lys Lys Tyr Glu Asp
60 65 70
atc tgc ccg tcg act cat aac atg gat gtc ccc aac atc aaa agg aat 293
Ile Cys Pro Ser Thr His Asn Met Asp Val Pro Asn Ile Lys Arg Asn
75 80 85
gat ttc cag ctg att ggc atc cag gat ggg tac cta tcc ctg ctc cag 341
Asp Phe Gln Leu Ile Gly Ile Gln Asp Gly Tyr Leu Ser Leu Leu Gln
90 95 100

gac	agt	ggg	gag	gta	cga	gag	gac	ctt	cgt	ctg	cct	gag	gga	gac	ctt	389
Asp	Ser	Gly	Glu	Val	Arg	Glu	Asp	Leu	Arg	Leu	Pro	Glu	Gly	Asp	Leu	
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ggc	aag	gag	att	gag	cag	aag	tat	gac	tgt	gga	gaa	gag	atc	ctg	atc	437
Gly	Lys	Glu	Ile	Glu	Gln	Lys	Tyr	Asp	Cys	Gly	Glu	Ile	Leu	Ile		
120								125						130		135
aca	gtg	ctg	tcc	gcc	atg	aca	gag	gag	gca	gct	gtt	gca	atc	aag	gcc	485
Thr	Val	Leu	Ser	Ala	Met	Thr	Glu	Glu	Ala	Ala	Val	Ala	Ile	Lys	Ala	
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atg	gca	aaa	taactggctt	ccagggtgcc	ggtgggtggca	gcagtgtatcc										534
Met	Ala	Lys														
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atttatttga	cgtttttattt	tggttttcct	caccccttca	aactgtcggg	gagaccctgc											654
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<213>	Rattus	sp.														
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Leu	Lys	Gly	Arg	Pro	Cys	Lys	Ile	Val	Glu	Met	Ser	Thr	Ser	Lys	Thr	
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Thr	Gly	Lys	Lys	Tyr	Glu	Asp	Ile	Cys	Pro	Ser	Thr	His	Asn	Met	Asp
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Val	Pro	Asn	Ile	Lys	Arg	Asn	Asp	Phe	Gln	Leu	Ile	Gly	Ile	Gln	Asp
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Gly	Tyr	Leu	Ser	Leu	Leu	Gln	Asp	Ser	Gly	Glu	Val	Arg	Glu	Asp	Leu
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Arg	Leu	Pro	Glu	Gly	Asp	Leu	Gly	Lys	Glu	Ile	Glu	Gln	Lys	Tyr	Asp
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Cys	Gly	Glu	Glu	Ile	Leu	Ile	Thr	Val	Leu	Ser	Ala	Met	Thr	Glu	Glu
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<213> *Homo sapiens*

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gtcgagatgt ctacttcgaa gactggcaag cacggccacg ccaagggtcca tctgggttgg 180
attgacatct ttactggaa gaaatatgaa gatatctgcc cgtcaactca taatatggat 240
gtcccccaaca tcaaaaaggaa tgacttccag ctgattggca tccaggatgg gtacctatca 300
ctgctccagg acagcgggaa ggtacgagag gaccttcgtc tccctgaggg agaccttggc 360
aaggagattg agcagaagta cgactgtgga gaagagatcc tgatcacgggt gctgtctgcc 420
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<212> DNA
<213> Homo sapiens
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<222> (455)..(456)
<223> a, t, c or g
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gtggagatgt caacttccaa aactggaaag catggtcatg ccaaggttca cttgttgg 180
attgatattt tcacgggcaa aaaatatgaa gatatttgc cttctactca caacatggat 240
gttccaaata ttaagagaaa tgattatcaa ctgatatgca ttcaagatgg ttacctttcc 300
ctgctgacag aaactggtga agttcgtgag gatcttaaac tgccagaagg tgaacttaggc 360
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<210> 5
 <211> 462
 <212> DNA
 <213> Homo sapiens

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 gtcgagatgt ctacttcgaa gactggcaag catggccatg ccaagggtcca tctgggttggc 180
 attgacattt ttactggaa gaaatatgaa gatatctgcc cgtcgactca taatatggat 240
 gtccccaaca tcaaacggaa tgacttccag ctgattggca tccaggatgg gtacctatcc 300
 ctgctccagg acagtgggg a ggtacgagag gacccctcg tcgcctgaagg agacccctggc 360
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 <213> Rattus sp.

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 <222> (1)..(453)

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gca ctc aca gac ggc tca ctg ggt gac atg atc ttt ttc cat tcc tat 96
 Ala Leu Thr Asp Gly Ser Leu Gly Asp Met Ile Phe Phe His Ser Tyr
 20 25 30

aaa aac cca ggc ttg gtc ctg gac atc gtt gaa gac ctg cgg ctc atc 144
 Lys Asn Pro Gly Leu Val Asp Ile Val Glu Asp Leu Arg Leu Ile
 35 40 45

aac atg cag gcc att ttc gcc aag cgc act ggg atg atc atc ctg ggt 192
 Asn Met Gln Ala Ile Phe Ala Lys Arg Thr Gly Met Ile Ile Leu Gly
 50 55 60

gga ggc gtg gtc aag cac cac atc gcc aat gct aac ctc atg cgg aat 240
 Gly Gly Val Val Lys His His Ile Ala Asn Ala Asn Leu Met Arg Asn
 65 70 75 80

gga gct gac tac gct gtt tat atc aac aca gcc cag gag ttt gat ggc 288
 Gly Ala Asp Tyr Ala Val Tyr Ile Asn Thr Ala Gln Glu Phe Asp Gly
 85 90 95

tca gac tca gga gcc cgg cca gat gag gct gtc tcc tgg ggc aag atc 336
 Ser Asp Ser Gly Ala Arg Pro Asp Glu Ala Val Ser Trp Gly Lys Ile
 100 105 110

cggtatg gat gca cag cca gta aag gtc tat gct gat gca tct ctg gtt 384
 Arg Met Asp Ala Gln Pro Val Lys Val Tyr Ala Asp Ala Ser Leu Val
 115 120 125

ttc ccc ttg ctg gtg gct gag aca ttc gcc caa aag gca gat gcc ttc 432
 Phe Pro Leu Leu Val Ala Glu Thr Phe Ala Gln Lys Ala Asp Ala Phe
 130 135 140

aga gct gag aag aat gag gac tgagcagatg ggttaagacg gaggcttctg 483
 Arg Ala Glu Lys Asn Glu Asp
 145 150

ccacaccttt atttattatt tgcataccaa cccctcctgg gccctctcct tggcagcag 543
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<210> 7
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 <212> PRT
 <213> Rattus sp.

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Lys Asn Pro Gly Leu Val Leu Asp Ile Val Glu Asp Leu Arg Leu Ile
 35 40 45

Asn Met Gln Ala Ile Phe Ala Lys Arg Thr Gly Met Ile Ile Leu Gly
 50 55 60

Gly Gly Val Val Lys His His Ile Ala Asn Ala Asn Leu Met Arg Asn
 65 70 75 80

Gly Ala Asp Tyr Ala Val Tyr Ile Asn Thr Ala Gln Glu Phe Asp Gly
 85 90 95

Ser Asp Ser Gly Ala Arg Pro Asp Glu Ala Val Ser Trp Gly Lys Ile
 100 105 110

Arg Met Asp Ala Gln Pro Val Lys Val Tyr Ala Asp Ala Ser Leu Val
 115 120 125

Phe Pro Leu Leu Val Ala Glu Thr Phe Ala Gln Lys Ala Asp Ala Phe
 130 135 140

Arg Ala Glu Lys Asn Glu Asp
 145 150

<210> 8
 <211> 453
 <212> DNA
 <213> Homo sapiens

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 atcattctgg gcggggggcgtt ggtcaagcacac cacattgcca atgccaacctt catgcggAAC 240
 gggggccactt acgcgttta catcaacaca gcccaggagt ttgatgctc tgactcaggt 300
 gcccggaccagg acgaggctgtt ctcctggggc aagatccggg tggatgcaca gcccgtcaag 360
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 <212> DNA
 <213> Artificial Sequence

<220>
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 <222> (12)
 <223> a, t, c or g

<400> 9
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<210> 10
 <211> 42
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

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<210> 11
 <211> 972
 <212> DNA
 <213> Rattus sp.

<220>
 <221> CDS
 <222> (1)..(327)

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gat att ttt act ggg aag aaa tat gaa gat atc tgc ccg tcg act cat 96
 Asp Ile Phe Thr Gly Lys Lys Tyr Glu Asp Ile Cys Pro Ser Thr His
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aac atg gat gtc ccc aac atc aaa agg aat gat ttc cag ctg att ggc	144
Asn Met Asp Val Pro Asn Ile Lys Arg Asn Asp Phe Gln Leu Ile Gly	
35 40 45	
atc cag gat ggg tac cta tcc ctg ctc cag gac agt ggg gag gta cga	192
Ile Gln Asp Gly Tyr Leu Ser Leu Leu Gln Asp Ser Gly Glu Val Arg	
50 55 60	
gag gac ctt cgt ctg cct gag gga gac ctt ggc aag gag att gag cag	240
Glu Asp Leu Arg Leu Pro Glu Gly Asp Leu Gly Lys Glu Ile Glu Gln	
65 70 75 80	
aag tat gac tgt gga gaa gag atc ctg atc aca gtg ctg tcc gcc atg	288
Lys Tyr Asp Cys Gly Glu Ile Leu Ile Thr Val Leu Ser Ala Met	
85 90 95	
aca gag gag gca gct gtt gca atc aag gcc atg gca aaa taactggctt	337
Thr Glu Ala Ala Val Ala Ile Lys Ala Met Ala Lys	
100 105	
ccagggtggc ggtggtggca gcagtgatcc atgagcctac agaggcccct ccccccagctc	397
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caccccttca aactgtcggg gagaccctgc cttcaccta gctcccttgg ccaggcatga	517
gggagccatg gccttggtga agctacctgc ctcttctctc gcagccctga tgggggaaag	577
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<212> PRT
<213> Rattus sp.

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35 40 45	

Ile Gln Asp Gly Tyr Leu Ser Leu Leu Gln Asp Ser Gly Glu Val Arg
 50 55 60

Glu Asp Leu Arg Leu Pro Glu Gly Asp Leu Gly Lys Glu Ile Glu Gln
 65 70 75 80

Lys Tyr Asp Cys Gly Glu Glu Ile Leu Ile Thr Val Leu Ser Ala Met
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Thr Glu Glu Ala Ala Val Ala Ile Lys Ala Met Ala Lys
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<210> 13
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 13
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<210> 14
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

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<210> 15
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 <213> Rattus sp.

<220>
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 <222> (33) .. (485)

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gag aca gga gat gca ggg gcc tca gcc acc ttc cca atg cag tgc tca 101
 Glu Thr Gly Asp Ala Gly Ala Ser Ala Thr Phe Pro Met Gln Cys Ser
 10 15 20

gca tta cgt aag aat ggt ttt gtg gtg ctc aag ggc cgg cca tgt aag	149
Ala Leu Arg Lys Asn Gly Phe Val Val Leu Lys Gly Arg Pro Cys Lys	
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Ile Val Glu Met Ser Thr Ser Lys Thr Gly Lys His Gly His Ala Lys	
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gtc cat ctg gtt ggt att gat att ttt act ggg aag aaa tat gaa gat	245
Val His Leu Val Gly Ile Asp Ile Phe Thr Gly Lys Lys Tyr Glu Asp	
60 65 70	
atc tgc ccg tcg act cat aac atg gat gtc ccc aac atc aaa agg aat	293
Ile Cys Pro Ser Thr His Asn Met Asp Val Pro Asn Ile Lys Arg Asn	
75 80 85	
gat ttc cag ctg att ggc atc cag gat ggg tac cta tcc ctg ctc cag	341
Asp Phe Gln Leu Ile Gly Ile Gln Asp Gly Tyr Leu Ser Leu Leu Gln	
90 95 100	
gac agt ggg gag gta cga gag gac ctt cgt ctg cct gag gga gac ctt	389
Asp Ser Gly Glu Val Arg Glu Asp Leu Arg Leu Pro Glu Gly Asp Leu	
105 110 115	
ggc aag gag att gag cag aag tat gac tgt gga gaa gag atc ctg atc	437
Gly Lys Glu Ile Glu Gln Lys Tyr Asp Cys Gly Glu Glu Ile Leu Ile	
120 125 130 135	
aca gtg ctg tcc gcc atg aca gag gag gca gct gtt gca atc aag gct	485
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<210> 16
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 <212> PRT
 <213> Rattus sp.

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35 40 45	
Gly Lys His Gly His Ala Lys Val His Leu Val Gly Ile Asp Ile Phe	
50 55 60	
Thr Gly Lys Lys Tyr Glu Asp Ile Cys Pro Ser Thr His Asn Met Asp	
65 70 75 80	
Val Pro Asn Ile Lys Arg Asn Asp Phe Gln Leu Ile Gly Ile Gln Asp	
85 90 95	

Gly Tyr Leu Ser Leu Leu Gln Asp Ser Gly Glu Val Arg Glu Asp Leu
 100 105 110

Arg Leu Pro Glu Gly Asp Leu Gly Lys Glu Ile Glu Gln Lys Tyr Asp
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Ala Ala Val Ala Ile Lys Ala
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 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

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<210> 18
 <211> 42
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 18
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<210> 19
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 19
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<210> 20
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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 20
ttgagtgaaa taaag 15

<210> 21
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<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer

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